CLAIMS

What is claimed is:

1. An intervertebral disc nucleus pulposus implant, comprising: a load bearing elastic body sized for introduction into an intervertebral disk space, said body surrounded by a resorbable shell.

2. An intervertebral disc nucleus pulposus implant, comprising: a load bearing elastic body sized for introduction into an intervertebral disc space, said body surrounded by a supporting member, said supporting member surrounded by a resorbable shell.

3. An intervertebral disc nucleus pulposus implant, comprising: a load bearing elastic body sized for placement into an intervertebral disc space, said body having a first end, a second end, a central portion, and a first configuration wherein said first end and said second end are positioned adjacent to said central portion to form at least one inner fold, said elastic body configurable into a second, straightened configuration for insertion through an opening in an intervertebral disc annulus fibrosis, said body configurable back into said first configuration after said insertion.

4. The implant of claim 3, wherein said inner fold defines an aperture.

5. The implant of claim 3, wherein said elastic body is comprised of a hydrogel material.

6. The implant of claim 3, wherein said elastic body is comprised of an elastomer.

7. The implant of claim 6, wherein said elastomer is selected from the group consisting of silicone, polyurethane, copolymers of silicone and polyurethane, polyolefins, nitrile and combinations thereof.

8. The implant of claim 4, wherein said inner fold has a surface with projections, said projections extending into said aperture.

9. The implant of claim 3, wherein said elastic body has an outer surface, said outer surface having projections extending therefrom, said projections configured for enhancing fixation of said body in said intervertebral disc space.

10. The implant of claim 3, wherein the outer surface of said elastic body is microtexturized.

11. The implant of claim 10, wherein said microtexturizing is performed by a process selected from the group consisting of bead blasting, plasma etching, chemical etching and combinations thereof.

12. The implant of claim 3, wherein said body further comprises a reinforcing material at said inner fold surface.

13. The implant of claim 12, wherein said reinforcing material comprises fibers.

14. The implant of claim 3, wherein said elastic body is comprised of a hydrogel material, said material having at least one growth factor dispersed therein.

15. The implant of claim 14, wherein said growth factor is selected from the group consisting of transforming growth factor β, bone morphogenetic proteins, fibroblast growth factors, platelet-derived growth factors, insulin-like growth factors and combinations thereof.

16. The implant of claim 14, wherein said growth factor comprises a recombinant protein.

17. The implant of claim 16, wherein said recombinant protein is a human protein.

18. The implant of claim 3, wherein said body has at least one surface depression in its second configuration, said inner fold formed from said surface depression.

19. The implant of claim 3, wherein said first end is formed from a first arm, said second end is formed from a second arm and one of said arms of said implant has a length greater than the other of said arms.

20. The implant of claim 4, wherein said aperture has a cross-sectional shape selected from the group consisting of annular-shaped, elliptical-shaped, and star-shaped.

21. The implant of claim 3, wherein said body is substantially elliptical- or ring-shaped in its folded configuration.

22. The implant of claim 3, wherein said body has a top surface for contacting an upper vertebral endplate of an intervertebral disc and a bottom surface for contacting a lower vertebral end plate of an intervertebral disc, said top and bottom surface configured to be complementary to the endplate they are in contact with.

23. The implant of claim 22, wherein said top and bottom surface of said body are convex.

24. The implant of claim 3, wherein said first end and said second end each have an inner edge and an outer edge, at least one of said inner edges having a rounded configuration.

25. The implant of claim 3, wherein said body has a top surface for contacting an upper vertebral endplate of an intervertebral disc, a bottom surface for contacting a lower vertebral end plate of an intervertebral disc, and an external side surface, said body having at least one groove on said side surface, said groove extending between said top surface and said bottom surface.

26. An intervertebral disc nucleus pulposus implant, comprising:

a load bearing elastic body sized for placement into an intervertebral disc space, said body having a first end and a second end, said first end and said second end configured for mating engagement with each other, said elastic body having a first configuration wherein said first end and said second end are matingly engaged to each other, said elastic body configurable into a second, straightened configuration for insertion through an opening in an intervertebral disc annulus fibrosis, said body configurable back into said first configuration after said insertion.

27. A kit for forming an intervertebral disc nucleus pulposus implant, comprising a load bearing elastic body sized for introduction into an intervertebral disc space and a container of material to form a resorbable shell around said body.

28. A kit for forming an intervertebral disc nucleus pulposus implant, comprising a load bearing elastic body sized for introduction into an intervertebral disc space, a supporting member to surround said body and a container of material to form a resorbable shell around said supporting member.

29. A method for implanting an intervertebral disc nucleus pulposus implant in an intervertebral disc space, comprising:

(a) preparing said intervertebal disc space to receive said implant; and

(b) introducing a load bearing elastic body into said disc space, said body surrounded in said disc space by a resorbable shell.

30. A method for implanting an intervertebral disc nucleus pulposus implant in an intervertebral disc space, comprising:

(a) preparing said intervertebal disc space to receive said implant; and

(b) introducing a load bearing elastic body into said disc space, said body surrounded by a supporting member, said supporting member surrounded in said disc space by a resorbable shell.

31. A method for implanting an intervertebral disc nucleus pulposus implant in an intervertebral disc space, comprising:

(a) providing a load bearing elastic body sized for placement into an intervertebral disc space, said body having a first end, a second end, a central portion, and a first configuration wherein said first end and said second end are positioned adjacent to said central portion to form at least one inner fold, said elastic body configurable into a second, straightened configuration for insertion through an opening in said annulus

fibrosis, said body configurable back into said first configuration after said insertion;

(b) preparing said intervertebal disc space to receive said body; and

(c) positioning said body into said intervertebral disc space after said preparing step.

32. A method for implanting an intervertebral disc nucleus pulposus implant in an intervertebral disc space, comprising:

(a) providing a load bearing elastic body sized for placement into an intervertebral disc space, said body having a first end and a second end, said first end and said second end configured for mating engagement with each other, said elastic body having a first configuration wherein said first end and said second end are matingly engaged to each other, said elastic body configurable into a second, straightened configuration for insertion through an opening in an intervertebral disc annulus fibrosis, said body configurable back into said first configuration after said insertion;

(b) preparing said intervertebal disc space to receive said body;

(c) positioning said body into said intervertebral disc space after said preparing step.

33. A spinal disc implant delivery device tip, comprising:

(a) a base member having a proximal end, a distal end and a lumen extending longitudinally therethrough; and

(b) a plurality of movable members, said movable members having a proximal end and a distal end, said proximal end of said movable members abutting said distal end of said base member, said movable members having a closed configuration defining a cavity in communication with said lumen of said base member, said members sized and configured for passage into an aperture in an annulus fibrosus.

34. The tip of claim 33, wherein said lumen of said base member is sized to receive a nucleus pulposus implant.

35. The tip of claim 33, wherein said movable members have an open configuration wherein said movable members move radially.

36. A spinal disc implant delivery device, comprising:

(a) a base member having a proximal end, a distal end and a lumen extending longitudinally therethrough;

(b) a plurality of movable members, said movable members having a proximal end and a distal end, said proximal end of said movable members abutting said distal end of said base member, said movable members having a closed configuration defining a cavity in communication with said lumen of said base member, said movable members sized and configured for passage through an aperture in an annulus fibrosus; and

(c) an elongated housing member having a proximal end, a distal end and a lumen extending longitudinally therethrough, said proximal end of said base member matingly engaged to said distal end of said elongated housing member.

37. The device of claim 36, wherein said movable members have an open configuration when said movable members move radially.

38. The device of claim 36, wherein said lumen of said elongated housing member is sized to receive a nucleus pulposus implant.

39. The device of claim 36, said device further comprising a plunger member, said plunger member disposed in said lumen of said elongated housing member.

40. A spinal disc implant delivery device, comprising:

(a) an elongated housing member having a proximal end, a distal end and a lumen extending longitudinally therethrough;

(b) a tip member, said tip member having a top wall, a bottom wall, a first side wall, a second side wall, a proximal end, and a distal end, said walls defining a lumen extending longitudinally therethrough, said proximal end of said tip member connected to said distal end of said elongated housing member, said tip member sized and configured for delivery of a spinal disc implant through an aperture in an annulus fibrosus, said lumen of said tip member in communication with said lumen of said elongated housing member.

41. The device of claim 40, said device further comprising a plunger member, said plunger member disposed in said lumen of said elongated housing member.

42. The device of claim 40, wherein said top wall and said bottom wall both include an opening therethrough that extends from said proximal end of said tip member to said distal end of said tip member.

43. The device of claim 42, wherein at least one of said top wall and said bottom wall has a surface that includes a surface roughening.

44. The device of claim 43, wherein said surface roughening comprises teeth.

45. The device of claim 42, wherein one of said side walls has a length greater than the other of said side walls.

46. The device of claim 40, wherein at least one of said top wall and said bottom wall has a surface that includes a surface roughening.

46. The device of claim 40, wherein one of said side walls has a length greater than the other of said side walls.

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